

Assessment of Farmworker Communities and Residential Sites for Risk of Heat
Stress
Final Report

7/31/2012

California Institute for Rural Studies

Gail Wadsworth

PO Box 1047, Davis, CA 95617-1047

gwadsworth@cirsiinc.org

530-756-6555 extension 17

Dr. Michael Rios, UC Davis Department of Environmental Design

Vallerye Mosquera, UC Davis Department of Community Development

Luis Magaña-Acevedo, Organization de Trabajadores Agrícolas de California

Stockton region, Stanislaus County

Total Grant Award: \$26,883

Objectives

The goal of this research was to create a pilot tool for assessing community and residential site factors that can exacerbate farmworkers' exposure to heat, increasing the risks of heat illness. Commonly used for disaster planning, tools for community risk assessment empower communities to reduce their own risk. Community risk assessment is used by many community based organizations around the world and is starting to be used to assess the risk of climate change in vulnerable populations. It is a participatory method to assess hazards and vulnerabilities in order to allow communities to reduce risk. These tools can help address environmental challenges by directly engaging the community. Assessment tools are also being used in community health promotion efforts, especially related to preventable diseases. For example, related to obesity prevention, these tools enable practitioners and local residents to identify barriers in the built environment that inhibit physical activity and mobility.

This project assessed off farm risk factors for heat illness among farmworker communities in the Central Valley. We evaluated the ability of workers to cool and hydrate after work as well as their access to transportation, communications and health resources. We had hoped to field test the tool as well but due to limits of the funding we were not able to do so. We did have the tool reviewed by members of agencies and community based organizations and we are currently seeking funding to test the tool in communities throughout the state of California.

Summary

There are many heat stress prevention strategies for farmworkers that focus on correcting either individual behaviors or work place conditions. Yet, few heat stress-specific health plans take into consideration the conditions of the built and natural environment that farmworkers return to at the end of a long day in the fields.

Climate studies project summer temperatures to rise considerably in the future. Therefore, policy makers and planners must take into account both the housing conditions of vulnerable populations and the potential increased risk for heat stress posed by higher temperatures.

It is important to note that housing affordability is the principal consideration for determining where farmworkers choose to live. A fundamental need is the provision of low-income housing with living standards that allow farmworkers to cool down and lower their body temperatures after work. This is particularly important for farmworkers living in urban environments where safe, shaded areas may be harder to find or utilize. If factors within the community are such that farmworkers are unable to dissipate

internal heat or to access necessary services, these must be considered in addition to on-farm exposure factors.

Our site assessments showed a number of trends within the small group of farmworkers we contacted. We do not assume that the results from this research can be extended to the farmworker population as a whole and are reporting simply on the in-depth interviews that were completed as a result of this funding. Twelve interviews were undertaken with the goal of discussing heat and housing issues with a cross section of workers in the Stockton area who lived in each of the different types of housing we identified as most common: urban apartments, urban houses, rural trailer parks, individual trailers in rural settings and transient housing.

The breakdown of our interviews is:

Trailer in trailer complex (owned, rent lot): 3

Trailer on company-owned ranch (free with work): 1

Single family apartment (rented): 2

Shared apartment (rented): 4

Transient housing (lean-to constructed from found materials): 1

Single family house (rented): 1

Our initial research found emergency heat plans in several Central Valley counties that may not address the special needs of farm laborers or residents living in poverty who may not have access to electronic media. In addition, we could find no other tools for assessing risk of heat stress in communities. In addition to consideration of housing, we also asked questions about travel to and from work, behaviors after work and awareness of both heat illness prevention and methods of obtaining information. These factors allowed us to consider the possibility of heat exposure before and after work, personal behaviors related to heat stress, how workers perceived heat illness and the best methods for dissemination of information. After completion of our literature review, site assessments, interviews and review by potential users, we created a set of tools for use by community organizations, agencies, and residents to identify both community and residential site factors that can increase farmworker's risk for heat stress illness.

Specific Results

Objective 1: Complete a literature review to compile existing research on heat illness risk among farmworkers and off-farm environmental factors.

- a. Review data available on heat stress among rural community members who are not involved in farm labor within the communities known for high risk of heat stress mortality and morbidity.

- b. Evaluate existing tools for community risk assessment and health promotion.
- c. Review existing Heat Action Plans in the Central Valley.

The results from this objective are compiled in the attached annotated bibliography (*Attachment 1*) by topic.

Objective 2: Create assessment tool

Two completed tools (*Attachments 2 and 3*) are included in this report. In addition, we have attached our initial site survey document (*Attachment 4*) to present a clear picture of the region where this study took place. We conducted evaluations of select locations including site assessments and interviews with farmworkers. This work was targeted in the Stockton region where there are consistently high reports of heat stress mortality and morbidity.

After our initial site assessment, we created a set of criteria to assess community factors that may contribute to heat illness in rural, farmworker communities. These criteria are evident in the completed tools. We included interview questions in our protocols to field test the pilot criteria at the sites that represented typical conditions found in farmworker communities and homes. After initial interviews, we were able to refine the criteria for inclusion in the assessment tools.

These tools were not validated in communities due to the lack of funding for this step of the work. We had hoped to be able to field test these tools but did not include funds in the budget to pay community outreach workers to assist in this step. We felt it was inappropriate for research staff to complete this testing. However, the tools were vetted with agencies and community based organizations before completion. Based on the feedback gotten both from farm labor participants in the study and this vetting, we are confident that the tools created are ready for full field testing. CIRS has submitted a two year request for funding to field test and refine the tools in multiple rural communities throughout the state.

We compiled a resources list for Central Valley communities. The list of resources is included in the annotated bibliography under regional resources.

Based on our logic model, we see that we were successful in achieving all but one output (field testing) and all of our short-term goals. In addition, we feel that we are well on our way to achieving our medium-term goals by increasing awareness of heat stress resources and identifying needs in multiple farm worker communities around Stockton, California. In addition, we believe that the tools themselves will increase awareness of the importance of community resources in the reduction of heat stress illness.

Potential Benefits/Impacts on Agriculture and/or Food Systems

The aim of this project was to create a pragmatic assessment tool and provide policy-relevant research to support to the efforts of farmworkers, community organizations, and policymakers working to reduce the incidences of heat-related illness and death. The results of our research will have clear benefits for the target audiences as farmworkers are disproportionately affected by heat illness.

California is by far the most productive agricultural state in the country. With 4% of the nation's farms, California generates 13% of U.S. farming receipts; grows more than half the nation's fruits, nuts, and vegetables; and leads the nation in production of more than 70 specialty crops. Within the state of California, the Central Valley generated 57% of the state's agricultural output in 2002. Six of California's top seven agricultural counties are located in the Central Valley (Fresno, Tulare, Kern, Merced, San Joaquin, Stanislaus). If the Central Valley were a separate state, it would rank first in agricultural production in the nation. However, the highly productive Central Valley commonly has daytime temperatures in the summer at or exceeding 100° F, frequently in the month of July. "Nearly 60% of all heat-related deaths among crop workers occurred in July, and most deaths occurred in the afternoon." There is an expectation that as climate change progresses the numbers of heat illness incidents will increase as a result of more frequent and more intense heat waves.

Currently the heat-related average annual death rate for crop workers is 0.39 per 100,000 workers, compared with 0.02 for all U.S. civilian workers. In California death rates are even higher at 0.49 per 100,000 workers. These statistics and the very real human loss in recent years led the state of California to implement the most stringent heat illness prevention standards in the US. Despite the best efforts of regulators, heat illness is a recurring and avoidable condition that results in multiple deaths among farmworkers every year. Our research will bring attention to this health issue that reaches beyond work places. The tools we have created will help organizations and individuals assess risk and make changes in environmental and policy settings that affect the health and well-being of farmworkers.

We will be encouraging community outreach workers involved in housing, public health and education to utilize the tools as they are and send us suggestions for inclusions and improvements. We planned to create a pilot tool for assessing risk and making suggestions for reducing risk. We have completed that process. However, we believe the tools need to be refined and tested. Outreach workers need training on their use. We strongly recommend research into best practices for education and outreach in communities that do not rely on the internet for information. The suggestions for outreach we received from farmworker participants in this study were variable but it

was clear that current information on cooling centers and disaster plans are not reaching this population.

Dissemination of Findings

Upon completion of the draft tools, they were sent out for evaluation to a dozen reviewers from policy and advocacy organizations for input. Comments and suggestions were incorporated into the final tools. Completed tools were sent to these same organizations for dispersal and use. The tools and this final report will be available for download at the CIRS website. In addition, we have published updates about this project on the Rural California Report as it progressed. These updates reached our regular online readers as well as our social media followers (approximately 2,000 for each). We hope to be able to field test these tools and train partners in at least seven rural communities throughout the state where CIRS works.

Literature Cited

Attachment 1 is an annotated bibliography that features both literature cited and a list of resources for people interested in heat stress in rural communities.